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Title: Impact of covered PBX-9502 with a 2-inch steel sphere: data summary

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Impact of covered PBX-9502 with a 2-inch steel sphere: data summary

Mark Marr-Lyon

11/12/14

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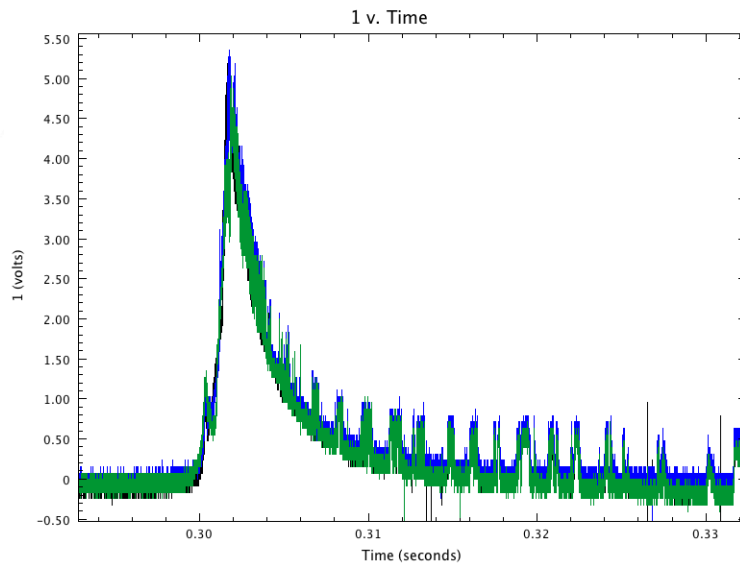


Overview

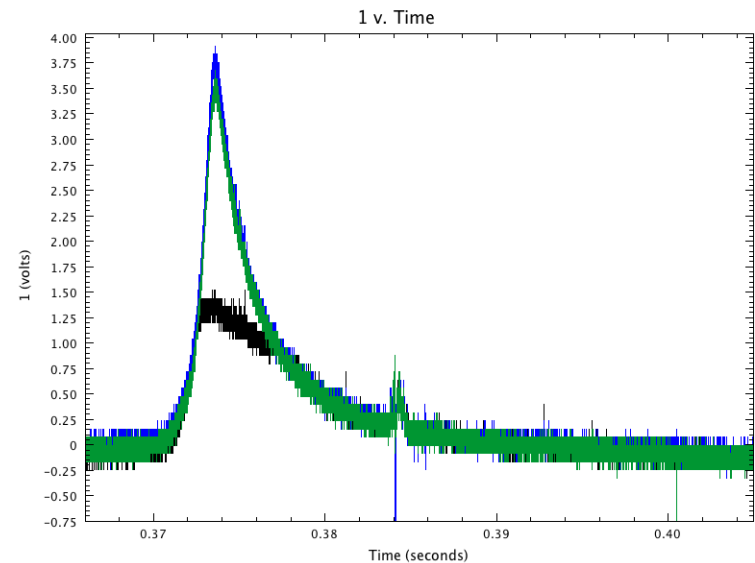
- Two shots were fired where a 2-inch diameter steel ball impacted a 1018-steel-cased cylinder of PBX-9502.
- PBX-9502 dimensions: 4.5" diameter x 4.5"
- 1/8"-thick 1018 steel cover plate
- 2" ball material: E52100 alloy steel
- The PBX-9502 did not detonate in either shot

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Powder chamber pressure data



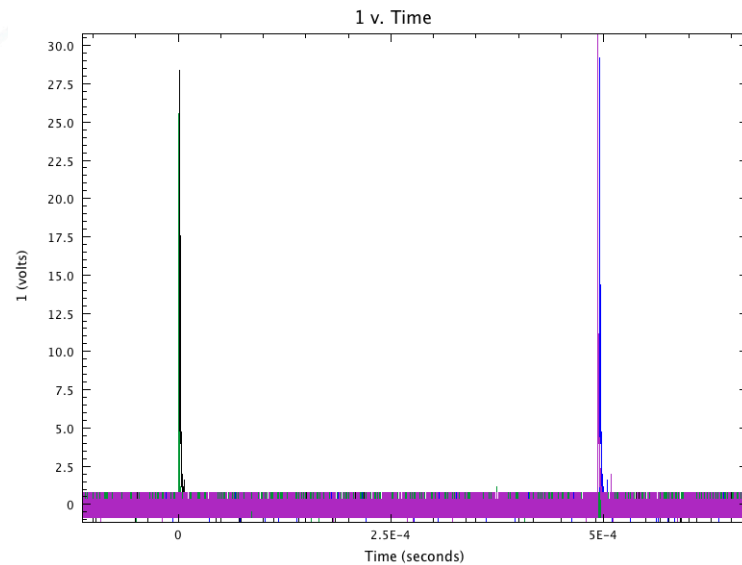
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pMax = 72600 psi



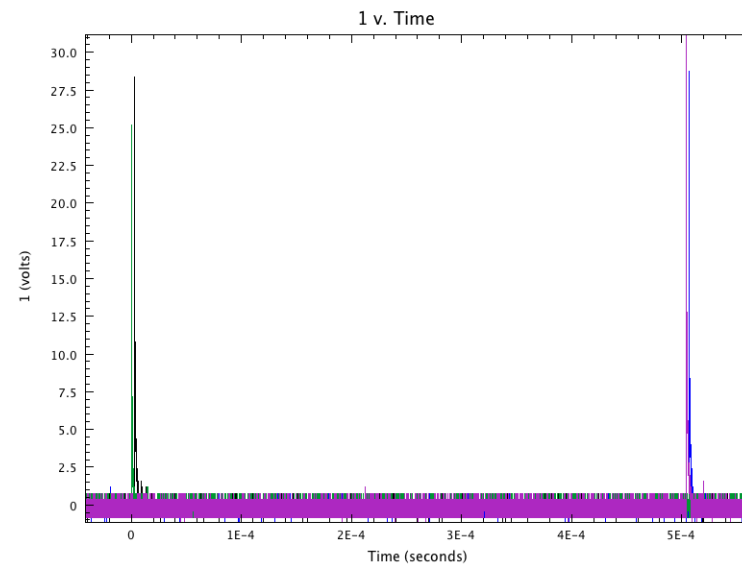
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pMax = 53100 psi

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Velocity screen data



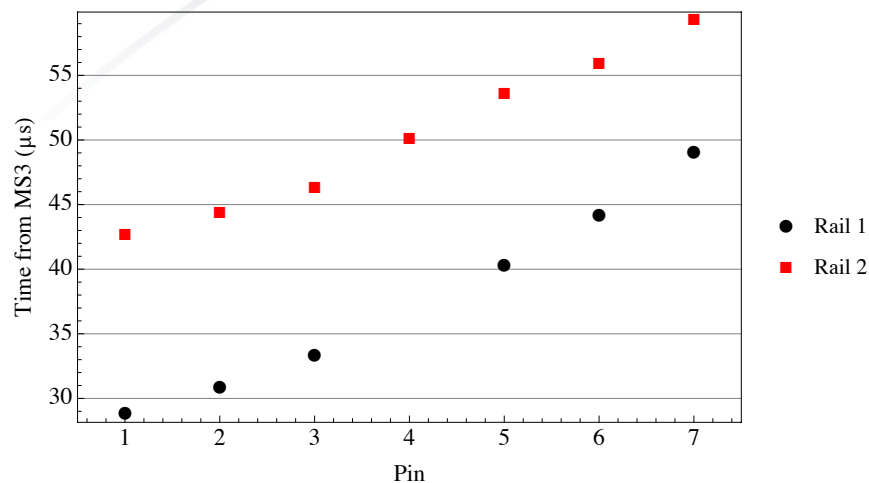
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 $v = 1.85 \text{ km/s}$



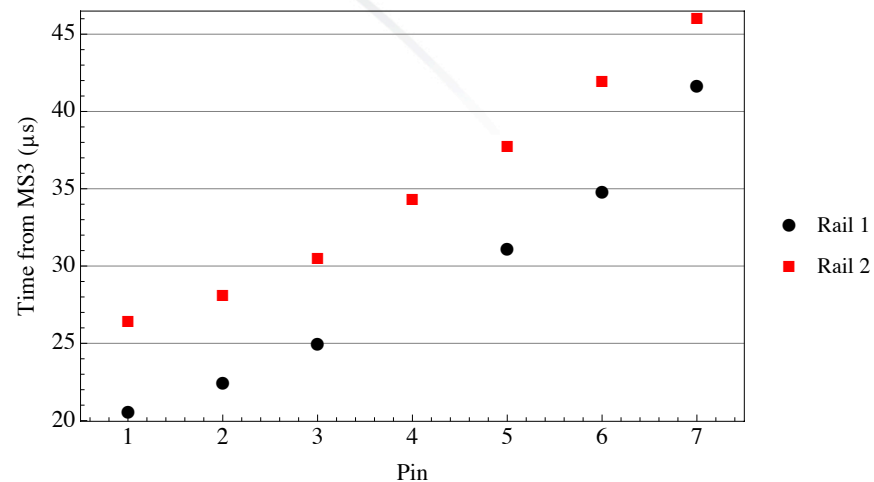
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 $v = 1.81 \text{ km/s}$

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Pin data



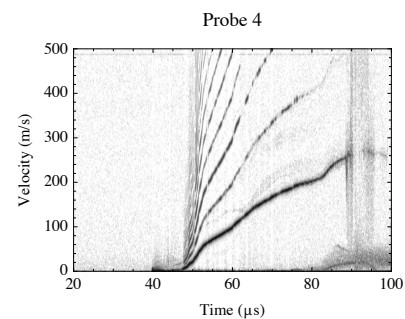
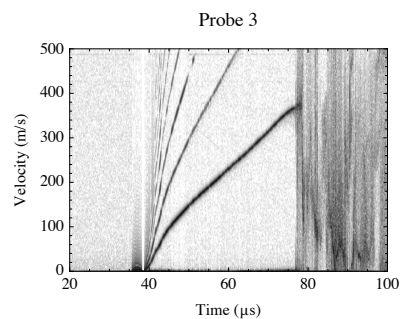
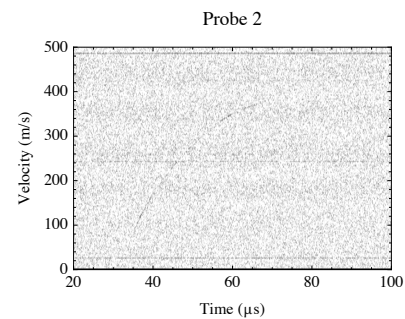
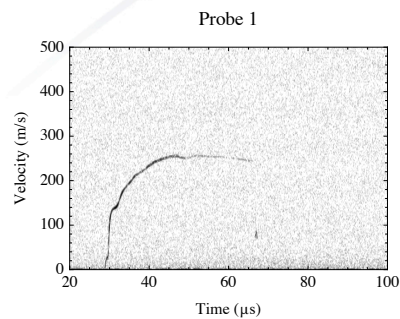
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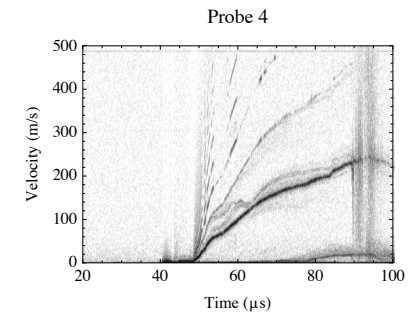
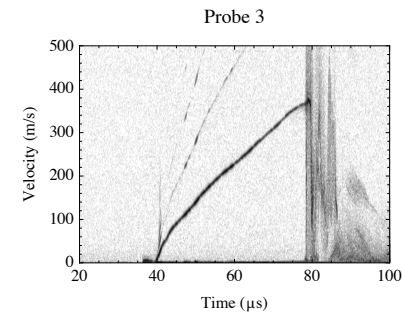
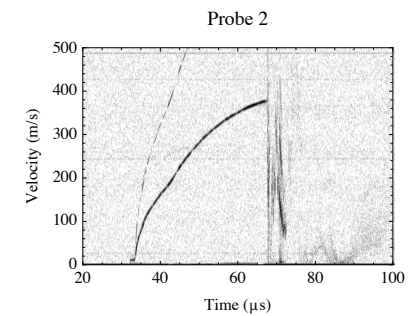
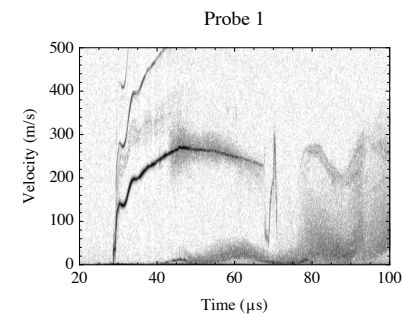
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PDV data



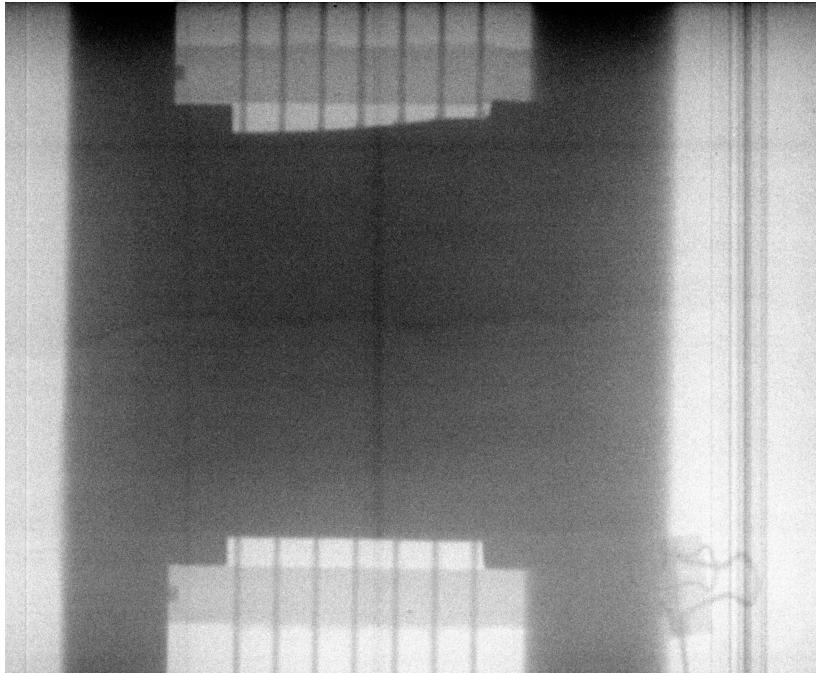
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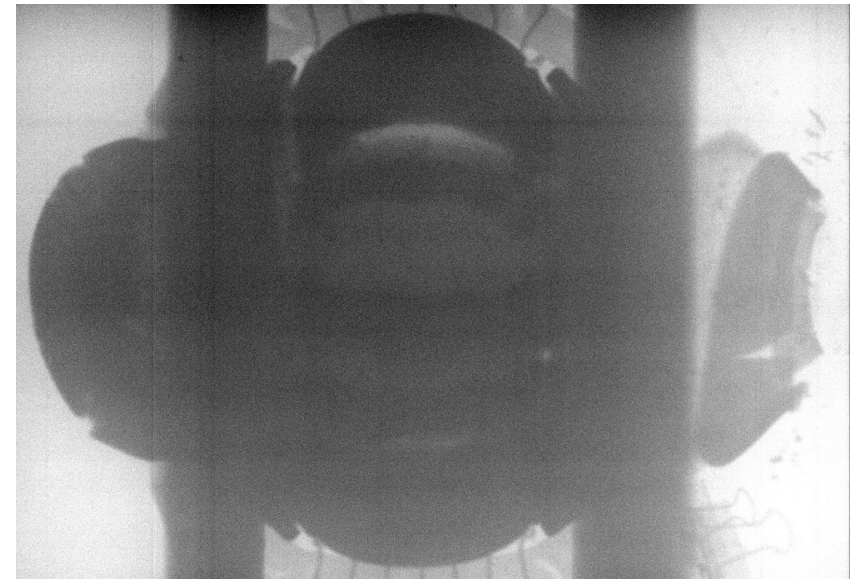
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Radiographs



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50 μ s after MS3

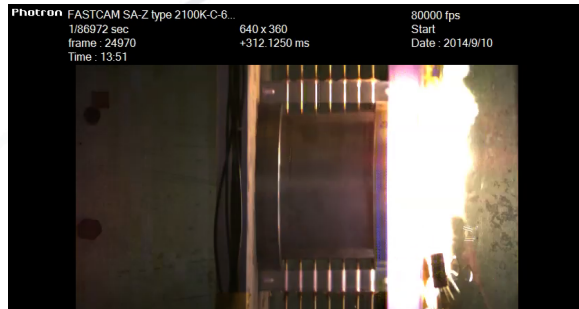


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200 μ s after MS3

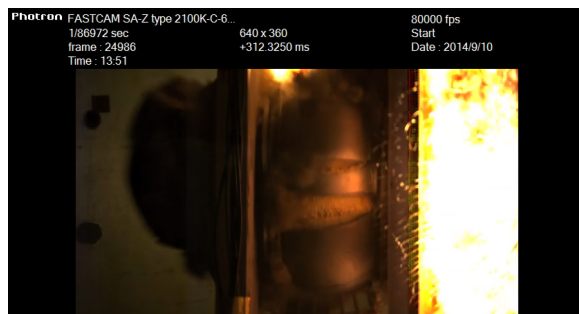
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Video frames from K12-22917

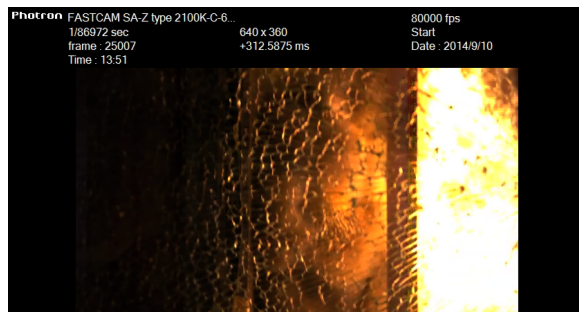
2-inch diameter steel ball
1.85 km/s



$t=12.5 \mu\text{s}$ after impact



$t=212.5 \mu\text{s}$ after impact



$t=475.0 \mu\text{s}$ after impact

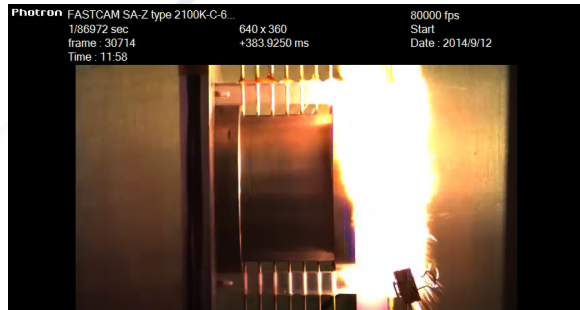
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K12-22917 impact



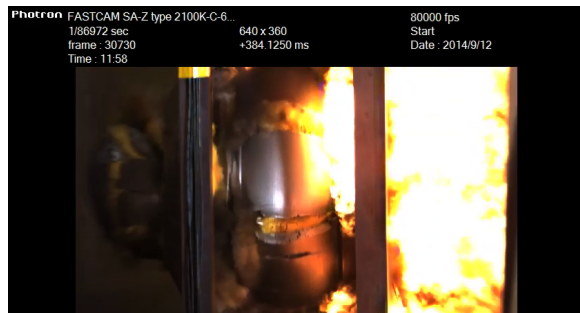
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Video frames from K12-22918



2-inch diameter steel ball
1.81 km/s

$t=12.5 \mu\text{s}$ after impact



$t=212.5 \mu\text{s}$ after impact



$t=475.0 \mu\text{s}$ after impact

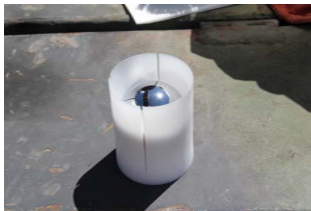
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K12-22918 impact



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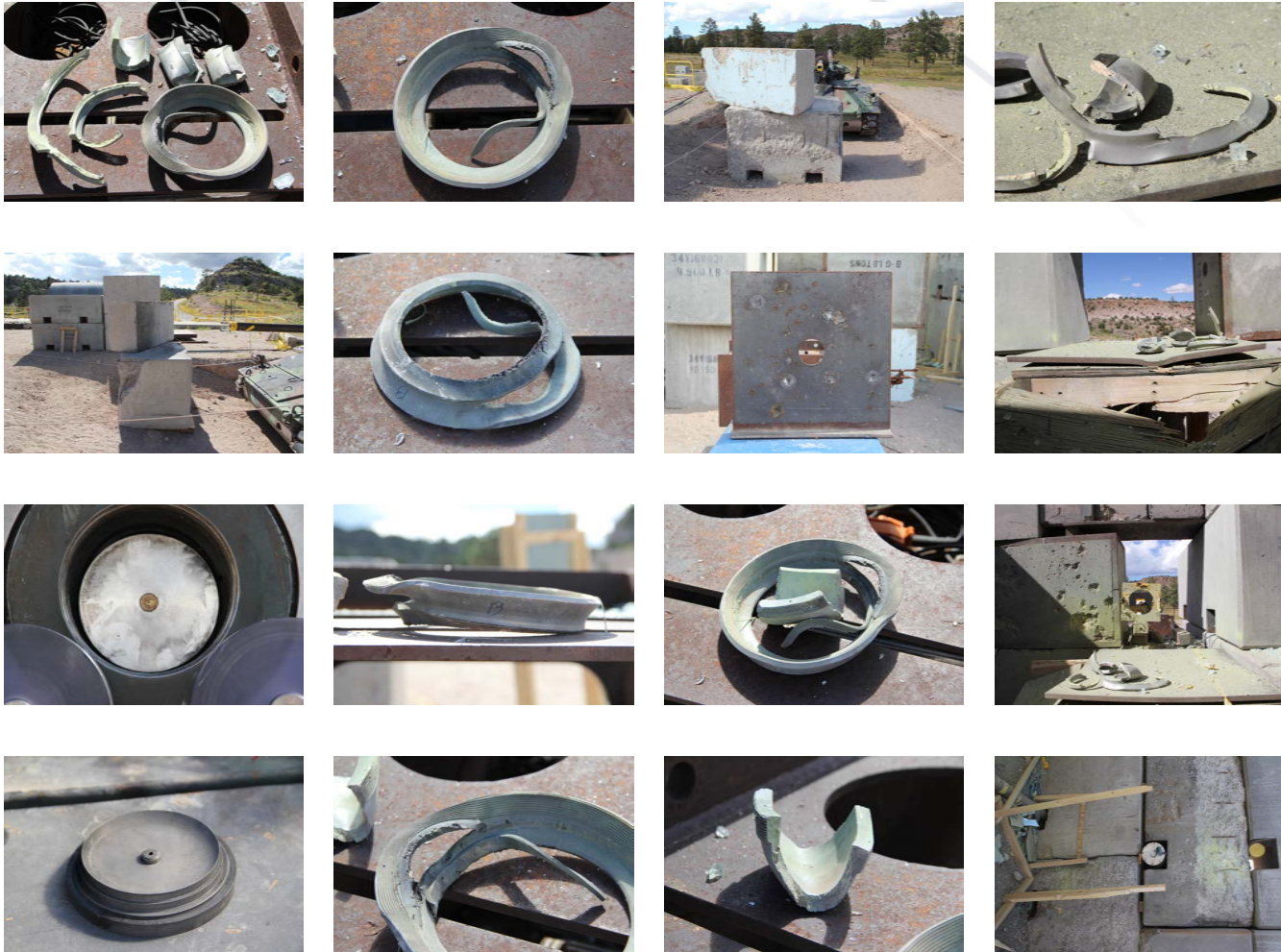
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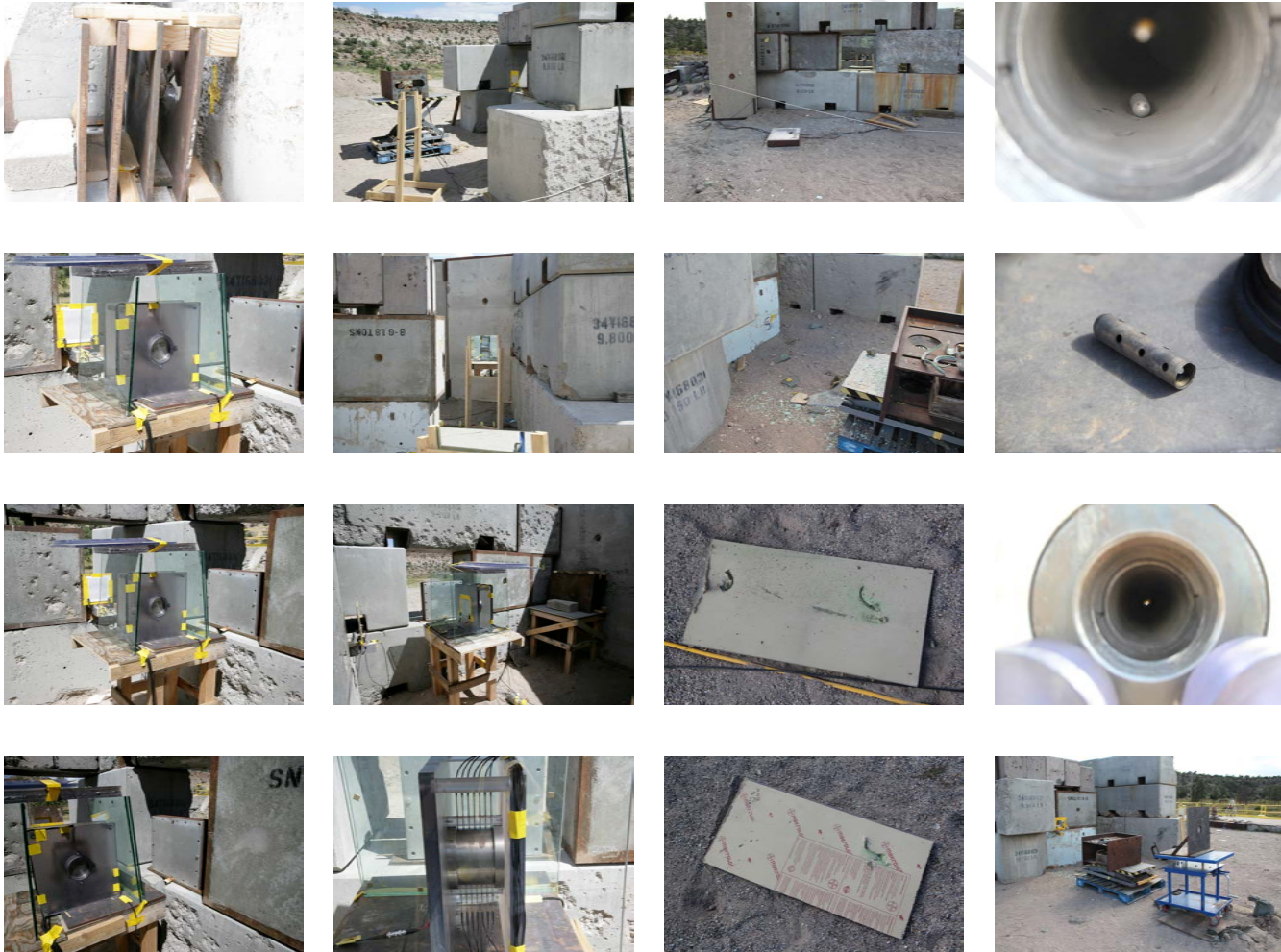
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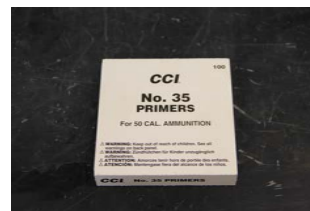
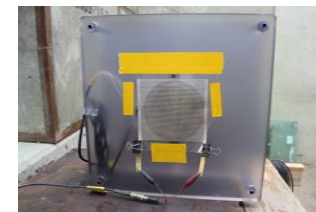
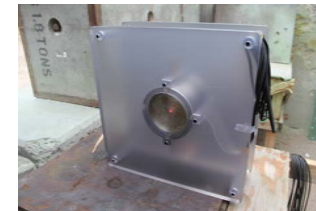
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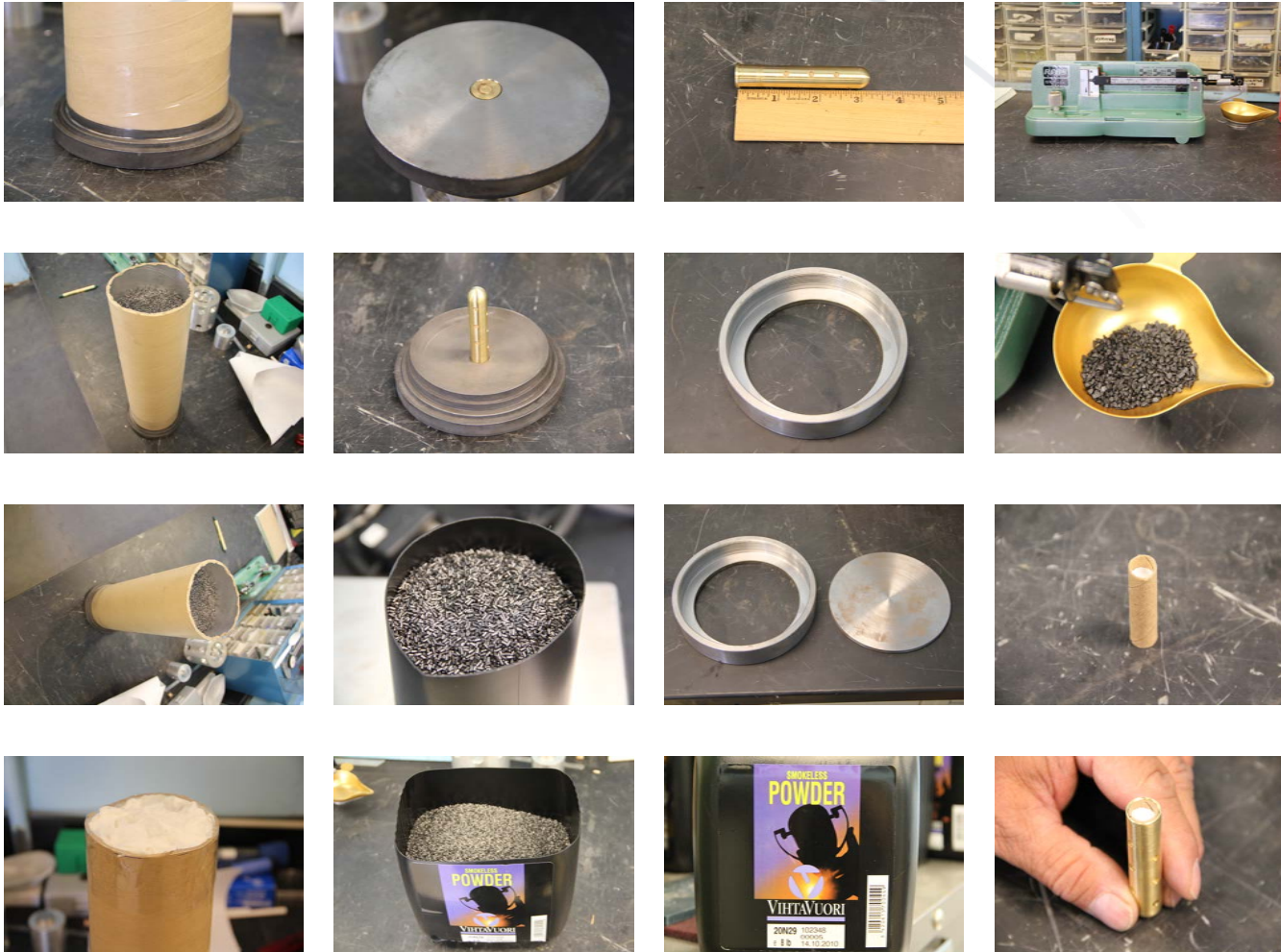
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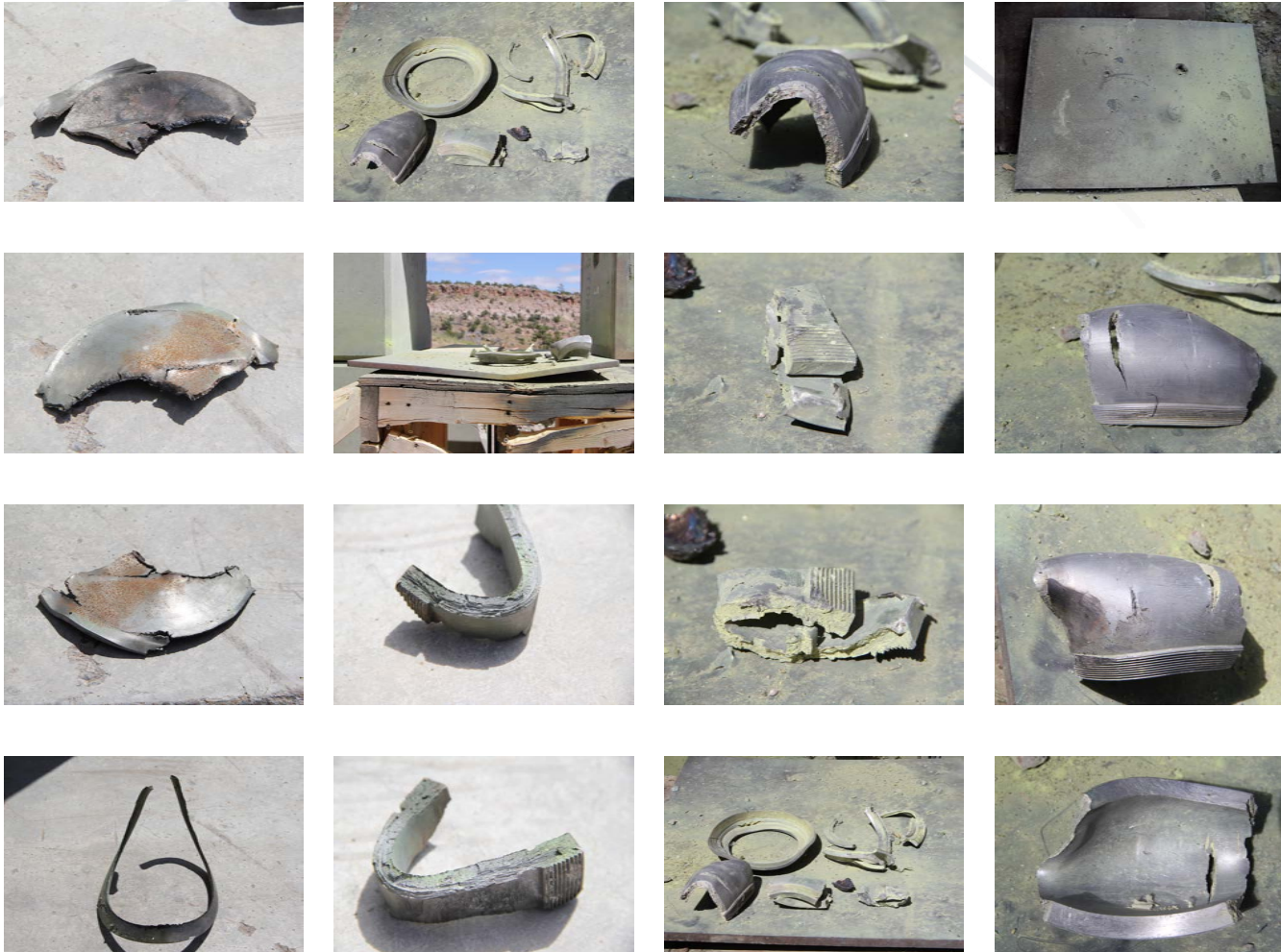
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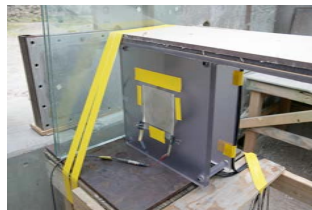
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